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Among the described fossils, *C. macrophyllus* much resembles *Buettneria perplexans* Ckll., also from Florissant. *B. perplexans* has a five-lobed calyx, the lobes or sepals about 9.5 mm. long.

C. macrophyllus was found at Station 14, Florissant (*W. P. Cockerell*). The mollusc *Planorbis florissantensis* occurs on the same slab, about 25 mm. from the plant.

REVIEWS

Scott's *Evolution of Plants**

This is one of the most fascinating and, at the same time, illuminating "popular" books on science that has appeared in some time; the style has a distinct literary value, and the statements have clearness and lucidity such as only a master can command. The scope of the book is much more restricted than the title indicates, for the subject of the evolution of plants is treated chiefly with reference to the fossil evidence (p. 20). The questions considered are (p. 21): (1) The evolution of the true flowering plants or angiosperms (Chapters II and III); (2) The evolution of the seed-plants generally (Chapter IV); (3) The evolution of the great groups of the higher cryptogams, *i. e.*, of those spore-plants which share with the seed-plants the possession of a vascular system (wood and bast) (Chapters V to VII).

It is of interest to note, in passing, the order of topics, as given above, which is a direct reversal of the order of evolutionary development. In view of the claim, now so frequently and emphatically urged, that any method of treatment of the subject matter of botany that departs from the supposed order of phylogeny is undesirable and "illogical," it is instructive to note the entire success of the author's inverse order of treatment. One could hardly claim, in seriousness, that the reader loses anything of either clearness or accuracy, by approaching, even for the first time, the history of development as here recorded.

Every specialist bemoans the neglect of his own corner by those who are absorbed in other corners, but it is doubtless

*Scott, Deunkinfield Henry. *The Evolution of Plants* pp. 1-256. f. 1-25. Henry Holt and Co., New York, and Williams and Norgate, London. 1911. (A volume of The Home University Library of Modern Knowledge.)

true that the very general neglect of paleobotany by botanists is most unfortunate. Lack of perspective always means distortion, and perspective in evolutionary botany is practically impossible without regarding the evidence offered only by fossil plants. The customary omission of any reference to this record in school text-books is responsible for the very common impression of students who have had only elementary courses that mosses are descended from liverworts, ferns from mosses; and gymnosperms from ferns. Many will realize for the first time, on reading this book, that the derivation of the leafy sporophyte from the sporogonium of the bryophytes is clearly not the only possible view, but that "the theory that the asexual plant of the higher Cryptogams was derived from a sporogonium is unsupported by [fossil] evidence." "The idea of the superior primitiveness and antiquity of plants of the Bryophyte type remains a pure assumption and receives no support from our knowledge of ancient vegetation" (p. 224). "On this theory, then, the sexual prothallus and the asexual plant are both alike derived from a thallus, and may once have been perfectly similar to each other; the one has gone up and the other down" (p. 226). The reviewer calls to mind more than one college text that contains not even a hint of this fossil evidence and the conclusion to which it leads.

Omissions of like kind, however, are chargeable to the book under review. In Chapter I, discussing the Darwinian theory, the mutation theory is absolutely ignored, and one reads (p. 13) with nothing short of amazement, that, "Natural Selection appears to be the only theory at present in the field, which can be said to give at all a satisfactory explanation, by means of natural causes, of the origin of adaptations." Of similar nature is the regarding of *Isoetes* as, without question, belonging to the Selaginellaceae. Again, in discussing the relation between the colors of flowers and insect visitation (pp. 41, 96-97), the recent work of Plateau and others receives no mention. Of course, in a popular book of restricted compass, one cannot go into a discussion of all the controverted questions of the specialist, but on the other hand, it hardly seems fair to the popular reader, to leave him, in such cases, with the impression that only the explanation or view given is held or tenable.

The terminology employed is about as simple and non-technical as accuracy would permit. For example, we read (p. 191) of club-mosses "with spores of one kind," where it would have been so easy to use the less-desirable technical adjective, homosporous. Especially valuable in a popular scientific work is the author's caution in inductive inference (*e. g.*, pp. 224, 228, 230, 237, and 239), emphasizing for the reader the necessity of suspending judgment in the light of insufficient data.

A genealogical tree would have added greatly to the already clear Conclusion, and two or three (at least) illustrations of fossil plants as they are found, imbedded in the rock, would have added much to the interest and value of the text, especially to the layman who is not already familiar with these in technical publications.

On page 135, we read that the old Linnean name, Cryptogams, indicated that the sexual reproduction of these plants was hidden, "which is no longer the case"! This last clause implies a sweeping morphological change which the author probably did not intend. The last sentence on page 189 reads as follows (*italics mine*): "On the *other* hand, nothing could be more different than the habit — tall trees on the *other* hand, and *dwarf-water* plants with a flat disc for a stem on the *other*." On page 7 evolution is defined as coextensive with organic evolution. *Tillandsia usneoides* ("old man's beard," or Florida Moss), ascribed on page 31 to "Western South America," is found from Eastern Virginia to Florida and Texas, and abundantly throughout tropical America.

In view of the fact that the book is issued by both an English and an American publisher, and therefore presumably intended for American as well as British readers, it is unfortunate that American geological formations are almost, if not quite, ignored. There is also no reference in the book to American paleobotanical contributions.

It is a pity that the publisher's work falls so far below the author's in point of merit. The book is printed on miserable paper, and either the proof-reading or the proof-correcting was not carefully done. The jumble of words composing most of

the fourth and fifth lines from the bottom of page 7 is a kind of error not uncommon in books from this American publishing house. Note also *carpets* for *carpels* (p. 70), *ony* for *only* (p. 71), *rotote* for *rotate* (p. 74), *snores* for *spores* (p. 125), *formed* for *found* (p. 130).

However, the reviewer does not wish to leave a final impression of the book out of harmony with the first sentence of this review. He feels under personal obligations to the author for this concise and clear summary of the contributions of paleobotany to plant evolution, and the volume is sure to meet with a well deserved and widespread welcome.

C. STUART GAGER.

BROOKLYN BOTANIC GARDEN,
September 22, 1911

A rather rare publication,* scarcely known to most botanists, contains, among a mass of ethnologic material, considerable of botanical interest. From page 179 to 204 there is a list of the vernacular names, used by the Indians for the commoner plants of their region, together with their Latin equivalents. The list is arranged according to families in alphabetical sequence, a purely botanical device quite unknown to the Indians whose sole ideas of plants seem to be confined to knowledge as to whether they are good for anything, or not. A short introductory note has this to say of the Indians' knowledge of their flora. "By far most of the species are designated as 'aze,' medicine, and are known for their medicinal properties. It might be said, in truth, that this is the keynote to the plant lore of the Navaho, since non-medicinal plants are designated as "t'ō'ch'īl," or merely plants. On the other hand their observations of the medicinal properties have in reality accounted for the discrimination of the various species of plants, and while many of their 'medicines' are traditional only, tradition has preserved the name although the object, and often the significance of the word, is obtained with difficulty."

The foods and beverages, most of which are of plant origin

* An ethnologic dictionary of the Navaho language. Written and published by the Franciscan Fathers of the Navajo (*sic*) Indian Mission, Saint Michaels, Arizona. Pp. 1-536. [Illust.] 1910. Price \$5.00.